

5. PRELIMINARY WASTE CHARACTERIZATION

All wastes generated will be characterized as required by DOE orders and the Resource Conservation and Recovery Act (RCRA) as codified at 40 CFR 261.11. Based on the RCRA characterization, hazardous waste determinations will be performed.

Preliminary waste classifications of expected wastes are presented in Tables 5-1. The volumes of the inert gases are conservatively estimated based on the maximum number of expected cylinders assuming each cylinder is full. The anecdotal evidence provides additional data for the acetylene cylinders which that estimate is based on. Classifications are based on process knowledge and analytical results. Subsequent to generation any or all of the waste may be reclassified. Documentation of all characterization and hazardous waste determinations made for the project will be maintained in the INEEL Waste Tracking System (IWTS). Final characterization will be determined by WGS.

Table 5-1. CPP-84 waste quantities and classifications.

Waste	Estimated Quantity	Waste Type	Waste Codes
Argon	500 kg	Industrial	N/A ^a
Nitrogen	500 kg	Industrial	N/A
Helium	500 kg	Industrial	N/A
Oxygen	500 kg	Industrial	N/A
Compressed air	500 kg	Industrial	N/A
Carbon dioxide	500 kg	Industrial	N/A
Acetylene	900 kg	RCRA ignitable hazardous waste	D001
Empty inert gas cylinders	Maximum of 50	Industrial	N/A
Empty acetylene cylinders	Maximum of 50	Industrial	N/A
PPE & miscellaneous noncontaminated waste	30 ft ³	Industrial	N/A
<u>Soil sampling waste^b</u>	16 ft ³	Industrial	N/A

a. N/A = not applicable .

b. 8 ft³ at CPP-84 and CPP-94.

6. WASTE STORAGE AND INSPECTION

Retrieved items from the excavation areas will be managed as a CERCLA waste. Since CERCLA wastes with RCRA characteristics will be treated and stored during the course of this project, the areas used to manage the wastes will be operated in accordance with the substantive requirements of a Temporary Unit defined in 40 CFR 264.553. For consistency with INEEL procedures, these areas will be defined as CERCLA Storage Areas (CSAs). Storage of containerized CERCLA wastes with RCRA characteristics at a CSA is conducted in accordance with established INEEL procedures that implement the substantive requirements of 40 CFR 240.170 through 40 CFR 264.179. Managing the wastes in this manner is in accordance with the applicable or relevant and appropriate requirements (ARARs) defined in Section 3-13 of the ROD (DOE 1999). All other wastes will be managed and stored as industrial wastes. Descriptions of all waste streams will be developed. These descriptions shall have the following information:

- Waste description
- List of COPCs
- Known Environmental Protection Agency (EPA) waste codes
- Operable unit
- Name and phone number of the generator point of contact (POC)
- Container descriptions.

WGS and Packaging & Transportation Organization (P&T) personnel will be consulted prior to generation of any waste to identify the specific types of containers in each category that should be used for the anticipated wastes. CSA inspections will be conducted by WGS.

CERCLA waste will be labeled as "CERCLA Waste." Figure 6-1 provides an example CERCLA waste label. Additional labeling and marking as required by WGS will be performed (i.e., barcode labels) from the IWTS database.

CERCLA WASTE	
Waste Code(s):	_____
Date Placed in Storage:	_____
Waste Form: (liquid, solid, soil, PPE, Etc.):	_____

Point of Contact:	_____

Figure 6-1. Standard CERCLA waste label.

6.1 Acetylene and Inert Gases

Cylinders will be segregated by compatibility type based on the preliminary cylinder classification. Flammability will be the segregation criteria. All cylinders that are determined by the initial inspection to contain nonflammable gases (nitrogen, oxygen, compressed air, helium, carbon dioxide, and argon) will be segregated separately. Likewise all flammable gas cylinders (acetylene) will be staged together. The segregated groups will be staged a minimum of 30 ft apart and will be situated away from the sampling and removal areas. Cylinders will be labeled as "CERCLA Waste," and the date of waste generation will be marked on each cylinder.

Cylinders containing flammable gases are CERCLA wastes that carry the RCRA D001 code and will be stored in a CSA that will be managed in accordance with the substantive storage requirements in IDAPA 58.01.05.008 (40 CFR 264.170 through 179). No smoking signs will be posted. Cylinders will be labeled with the words "CERCLA WASTE" and with the D001 waste code. Waste generation dates shall be marked on each cylinder. Waste container and storage area inspections will be conducted weekly to ensure containers are not leaking and that labeling is correct. Emergency equipment and materials will be inspected as required by WGS.

6.2 Empty, Dismantled Inert Gas Cylinders

Valves will be removed from all cylinders and the cylinders will be rendered inoperable by either puncturing or cutting the cylinders. Cylinders will be managed as industrial waste. Inspections of the cylinders and staging area are not required.

6.3 Empty Acetylene Cylinders

Acetylene cylinders meeting the definition of RCRA-empty as defined in 40 CFR 261.7(b)(2) will be managed as industrial waste and staged in a weather-protected structure. Inspections of the cylinders and staging area are not required as the cylinders are not RCRA-regulated. The D001 code does not apply as the acetone in the inner core is nonliquid and is not flammable. There are no TSCA storage or inspection requirements pertaining to the asbestos.

6.4 Personal Protective Equipment and Miscellaneous Noncontaminated Waste

During operations, PPE and miscellaneous wastes will be bagged as they are generated. Waste will be collected on regular basis and disposed at the INEEL Landfill Complex. Wastes with sharp edges will be taped. All wastes will be bagged and disposed at the INEEL Landfill Complex.

6.5 Soil Sampling Wastes

Wastes generated during post-removal soil sampling at CPP-84 and CPP-94 is expected to be nonhazardous. This industrial waste will be bagged and disposed at the INEEL Landfill Complex if it meets the waste acceptance criteria defined in the INEEL reusable, recyclable, and waste acceptance criteria (RRWAC).

6.6 New Wastes

If wastes are excavated other than what is expected to be retrieved, these wastes will undergo a hazardous waste determination in accordance with INEEL procedures and will be stored in an appropriate storage location based on the results of the determination. Wastes that are determined to be hazardous will be stored in a CSA. Wastes that cannot be readily determined as to whether they are hazardous or not will be managed as if they are hazardous in a CSA pending additional characterization. Wastes stored in a CSA will be labeled as "CERCLA Wastes" and will be managed in accordance with the substantive requirements of 40 CFR 264.170 – 179. These wastes will be stored in the CSA pending identification of an appropriate on-Site or off-Site treatment and disposal facility. Each waste will be handled on a case-by case-basis depending on what the waste is. Although the evidence suggests only cylinders containing the anticipated construction gases will be retrieved during this removal action, there is a possibility that other gases or waste types may be identified once the excavation begins. Potential waste types to be encountered may include debris (rubble, wood, etc.) or other gas cylinders. If a container other than a gas cylinder is found and there are no markings to identify the contents, the waste will be managed as an "unknown".

If debris wastes are encountered, a hazardous waste determination will be performed. It is not likely that any debris will be RCRA-hazardous and these wastes will be managed as industrial waste pending disposal. They will not be managed in a CSA unless there is reason to suspect, based on the hazardous waste determination, to manage the waste as hazardous.

Other gas cylinders will be managed in accordance with the hazard class for the particular type of gas. These classes include inert, flammable, explosive, and poisonous gases. Each class of gas will be separated from other gas types and will be compliantly managed in a CSA.

Table 6-1 provides a summary of typical compressed gases and other waste types that could be encountered and suitable management methods.

Table 6-1. Treatment and disposal methods for new wastes.

New Wastes	Treatment
Anhydrous ammonia	Convert to ammonium nitrate by passing vapors into nitric acid solution.
Chlorine	Neutralize by passing vapors into 18–20% sodium hydroxide solution.
Chlorine Trifluoride	Treat and dispose off-Site.
Cyclopropane	Treat and dispose off-Site.
Dimethylamine	Neutralize by passing vapors into a nitric acid solution.
Ethyl chloride	Neutralize by passing vapors into sodium hydroxide solution.
Ethylene oxide, and ethylene oxide and nonflammable gas mixtures	Treat and dispose off-Site.
Hydrogen chloride	Neutralize by passing vapors into sodium hydroxide solution.
Hydrogen sulfide	Neutralize by passing vapors into sodium hydroxide solution.
Methyl bromide	Neutralize by passing vapors into sodium hydroxide solution.
Methyl chloride	Neutralize by passing vapors into sodium hydroxide solution.
Methoxyflurane	Treat and dispose off-Site.
Liquified petroleum gas	Thermal oxidation.
Phosgene	Neutralize by passing vapors into sodium hydroxide solution.
Sulfur dioxide	Neutralize by passing vapors into sodium hydroxide solution.
Debris waste	Perform a hazardous waste determination and manage in accordance with the results of the determination and this <i>Waste Management Plan</i> .
Unknown wastes	Store unknowns in a CSA. Manage the waste as if it is incompatible with other wastes pending completion of characterization activities and performance of a hazardous determination.

7. WASTE STREAM TREATMENT AND DISPOSAL

All cylinder gases will be sampled and analyzed on-site in order to determine appropriate management and treatment. Analysis will confirm whether the gases contained in the cylinders are common industrial gases typically associated with construction operations. Prior to sending wastes to an off-Site (off of the INEEL) storage, treatment, or disposal facility, a suitable assessment will be performed in accordance with 40 CFR 300.440.

7.1 Waste Management and Treatment

7.1.1 Inert Gases

Following laboratory confirmation of cylinder contents, inert gases will be vented to atmosphere to render the cylinder empty in accordance with 40 CFR 261.7(b)(2). Venting will not exceed reportable quantities or other regulatory limits. The following gases will be vented:

- Carbon dioxide
- Oxygen
- Nitrogen
- Compressed air
- Helium
- Argon.

7.1.2 Acetylene

The preferred treatment technology for acetylene is thermal oxidation (or flaring) from the valve sampling station (VSS) or cylinder recovery vessel (CRV). The acetylene gas is mixed with another fuel gas (usually propane) to produce a consistent flare and destruction temperatures. This approach allows for timely treatment of acetylene at low costs. The flaring approach is consistent with the compressed gas industry standard for the destruction of acetylene at commercial facilities.

7.1.3 Empty Inert Gas Cylinders

Empty inert gas cylinders will be rendered inoperable. This will be achieved by removing the valves and by cutting or drilling holes into the cylinder bodies. Cylinders will be disposed at the INEEL Landfill Complex. Disposal arrangements will be managed by WGS.

7.1.4 Empty Acetylene Cylinders

Empty acetylene cylinders will be stored on-Site in a CSA pending identification and approval of an appropriate off-Site disposal facility where the cylinders will ultimately be shipped to for disposal. WGS will coordinate disposal arrangements. The cylinders will be prepared and packaged in according to the receiving facility's waste acceptance criteria. The cylinders will not be cut apart or drilled due to the potential asbestos hazard that could be created if the cylinder cores are disturbed.

7.1.5 Personal Protective Equipment and Miscellaneous Noncontaminated Waste

No treatment will be performed on this waste. Waste will be disposed at the INEEL Landfill Complex as necessary.

7.1.6 New Wastes

New wastes will be managed on a case-by-case basis depending on the characteristics of the individual waste. If another gas found and is amenable to either venting or thermal oxidation, the waste will be treated on-site along with the other gas cylinders. If the gas is not amenable to treatment in this manner, a determination will be made to either conduct treatment on-site (using technology such as chemical oxidation), or identify a suitable off-site commercial transportation, storage, and disposal facility (TSDF) that can accept the waste for treatment.

8. WASTE MINIMIZATION

Project personnel will ensure waste minimization methods are used in all phases of the project. Only the necessary tools, equipment, and materials will be taken into the exclusion zone. Recycling and contamination control will be conducted as applicable.

8.1 Recycling

Brass and bronze valves will be evaluated for recycling. Recycling of other cylinder parts, i.e., pressure relief devices, will be evaluated on a case-by-basis. It is unlikely that there will be any other recyclable wastes; however, each waste stream will be evaluated for recycling options.

8.2 Contamination Control

If radiological or chemical contamination is detected, contamination controls methods will be implemented as necessary. Decontamination stations will be established as necessary. The use of decontamination fluids will be minimized and will consist of site-approved decontamination agents.

If contaminated soil is discovered, soil removal will be limited to the affected area. Contaminated soil will be staged on-Site in a weather-protected confinement until arrangement to ship the soil to the Staging and Storage Annex (SSA) are completed.

9. WASTE PACKAGING AND SHIPPING

Containers that store waste must be in good condition and compatible with the waste being stored. It is important that containers selected for waste are compatible with final disposition plans. This will alleviate the need for waste repackaging prior to shipment to a treatment or disposal facility. The types of containers that may be used for waste storage during this project include 208-L (55-gal) open top drums, INEEL wooden boxes ($1.2 \times 1.2 \times 2.4$ m [$4 \times 4 \times 8$ ft]) and $0.6 \times 1.2 \times 2.4$ m [$2 \times 4 \times 8$ ft]) and $8.8 \times 2.4 \times 2.4$ m ($20 \times 8 \times 8$ ft) steel-reinforced Sealander boxes or cargo containers. Standard $1.2 \times 2.4 \times 8.8$ m ($4 \times 8 \times 20$ ft) open top roll containers may also be used for containment of excess soil drill cuttings.

Prior to shipment over any public roadways, waste will be packaged and shipped in accordance with all applicable DOT regulations. The Packaging & Transportation (P&T) organization will coordinate all off-Site waste shipments.

10. RECORDKEEPING AND REPORTING

Proper management of records from creation through review, approval, release, distribution, revision, and disposition ensures that waste management activities are adequately documented and that information is available when needed. The DOE has imposed a moratorium on the destruction of any epidemiological or environmental records. Therefore, until the DOE moratorium is lifted, all environmental records discussed in this section will be maintained indefinitely.

10.1 Waste Generation and Characterization Records

Records related to waste generation and characterization generated by Operable Unit (OU) 3-13 personnel during field operations may include those shown below and will be maintained as outlined in INEEL procedures.

Records of operation will include the following:

- Sampling and testing data
- Sample quality control and quality assurance documentation
- Chain of custody forms
- Field sampling plans
- Sampling and analysis logbook
- Field team leader logbook
- IWTS material profile (electronic record maintained by WGS)
- IWTS container profile (electronic record maintained by WGS)
- Shipping documents.

10.2 Waste Storage

Records related to CERCLA waste will be maintained in the OU 3-13 project files. These include the following:

- CSA registration forms
- Contingency plan
- Training records
- Inspection records
- Spill notifications
- Spill cleanup records.

10.3 Waste Shipment

Shipments of radioactive, mixed, or hazardous wastes are arranged by P&T personnel with assistance from waste generators and/or WGS. The following records may be generated during shipping activities and will be maintained by P&T personnel in accordance with P&T procedures:

- Company Form 461.02, "Request for Hazardous Material Shipment"
- Bill of lading
- Uniform Hazardous Waste Manifest (EPA Form 8700-22).

Shipment tasks will also be documented in an electronic IWTS shipping task profile for each waste container.

10.4 Waste Treatment and Disposition

Records related to waste disposition will be maintained by OU 3-13, WGS, and P&T personnel, as appropriate, and (if different organizations) the receiving facilities.

Waste disposal records will be maintained as part of the Waste Profile Folder. For waste containers profiled in IWTS, electronic disposition tasks are generated as the wastes are treated or disposed and individual waste containers are "decommissioned" in the electronic profile. This creates a "cradle to grave" electronic record for each waste container in IWTS.

11. REFERENCES

- 40 CFR 261.21, July 2000, "Characteristic of ignitability," *Code of Federal Regulations*, Office of the Federal Register.
- 40 CFR 261.7, July 2000, "Residues of hazardous waste in empty containers," *Code of Federal Regulations*, Office of the Federal Register.
- 40 CFR 262.11, July 2000, "Hazardous waste determination," *Code of Federal Regulations*, Office of the Federal Register.
- 40 CFR 264 Subpart I, July 2000, "Use and Management of Containers," Parts 170-179, *Code of Federal Regulations*, Office of the Federal Register.
- 40 CFR 261.11, July 2000, "Criteria for listing hazardous waste," *Code of Federal Regulations*, Office of the Federal Register.
- 40 CFR 264.553, July 2000, "Temporary Units (TU)," *Code of Federal Regulations*, Office of the Federal Register.
- 40 CFR 300.440, July 2000, "Procedures for planning and implementing off-site response actions," *Code of Federal Regulations*, Office of the Federal Register.
- DOE-ID, October 1999, *Final Record of Decision, Idaho Nuclear Technology and Engineering Center, Operable Unit 3-13, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho*, DOE-ID-10660, Rev. 0, U.S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho.
- DOE-ID, December 2000a, *Remedial Design/Remedial Action Work Plan for Operable Unit 3-13, Group 6, Buried Gas Cylinders*, DOE-ID-10838, Rev. 0, U.S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho.
- DOE-ID, July 2000b, *Preliminary Characterization Plan for OU 3-13, Group 6, Remedial Design/Remedial Action (RD/RA) Buried Gas Cylinder Sites CPP-84 and CPP-94*, Rev. 1, INEEL/EXT-2000-00398. [Superseded by DOE-ID-10842, Rev. 1, December 2000]
- IDAPA 58.01.05.008, April 5, 2000, "Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities," *Idaho Administrative Code*, Office of Administrative Rules.
- Management Control Procedure, MCP-3472, "Identification and Characterization of Environmentally Regulated Waste," August 19, 1999, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho.
- Management Control Procedure, MCP-3475, "Temporary Storage of CERCLA-Generated Waste at the INEEL," September 3, 1999, Idaho National Engineering and Environmental Laboratory, Idaho Falls, Idaho.